ABSTRACT

Nanohybrid sol-gel materials, based on silica organically modified (ormosil) and doped with the ruthenium species tetra-*n*-propylammonium perruthenate (TPAP) are highly efficient catalysts for the selective oxidation of alcohols to carbonyls with oxygen at low pressure, in organic solvents as well as in carbon dioxide in supercritical state. Novel, highly active and stable materials are the fluorinated ormosils. Optimal conditions for the preparation and use thereof in liquid-phase as well as in supercritical CO_2 were set by studying the structure-activity relationships of the materials, with particular reference to the surface hydrophobic/hydrophilic properties and to the textural ones.